WORD ORDER TYPOLOGY AND LANGUAGE UNIVERSALS

Rajendran Sankaravelayuthan
Amrita Vishwa Vidyapeetham
Coimbatore
rajushush@gmail.com

INTRODUCTION

In linguistics, word order typology is the study of the order of the syntactic constituents of a language, and how different languages can employ different orders. Some languages use relatively restrictive word order, often relying on the order of constituents to convey important grammatical information. Word Order typology has a long history. Starting from Greenberg (1960), many have contributed to the idea. Vennemann (1973), Steele (1975), Keenan (1978), Lehmann (1978), Comrie (1981) Hawkins (1980, 1983), Croft (1990) and others have contributed to the word order typology. This chapter has taken their ideas and viewpoints and discussed them to suit our purpose.

The term typology has a number of different uses, both within linguistics and outside linguistics. The common definition of the term is roughly synonymous with "taxonomy" or "classification", a classification of the phenomenon under study into types, particularly structural types. This is the definition that is found outside of linguistics, for example in biology, a field that inspired linguistic theory in the 19th century.

The broadest and most unassuming linguistic definition of "typology" refers to a classification of structural types across languages. In this second definition, a language is taken to belong to a single type, and a typology of languages is a definition of the types and an enumeration or classification of the languages into those types. This is considered as typological classification. This definition introduces the basic connotation that "typology" in contemporary linguistics has to do with cross-linguistic comparison of some sort.

A more specific definition of "typology" is that it is the study of linguistic patterns that are found cross-linguistically; in particular, patterns that can be discovered solely by cross linguistic comparison. The classic example of typology under this third definition is the implicational universal. i.e., "if the demonstrative follows the head noun, then the relative clause

also follows the head noun". This universal cannot be discovered or verified by observing only a single language such as English.

Typology is a sub discipline of linguistics - not unlike, say, first language acquisition – with a particular domain of linguistic facts to examine cross linguistic patterns. Typology in this sense began in earnest with Joseph H Greenberg's discovery of implicational universals of morphology and word order, first presented in 1960 (Greenberg 1966 a).

Typology represents an "approach" to the study of language that contrasts with prior approaches, such as American structuralism and generative grammar. Typology is an approach to linguistic theorizing or more precisely a methodology of linguistic analysis that gives rise to different kinds of linguistic theories than other "approaches". Sometimes this view of typology is called the "Greenbergian", as opposed to the "Chomskyan", approach to linguistic theory. This view of typology is closely allied to functionalism, the hypothesis that linguistic structure should be explained primarily in terms of linguistic function. (The Chomskyan approach is contrastively titled formalism). For this reason, typology in this sense is often called the (functional) typological approach. The functional typological approach became generally recognized in the 1970s and is primarily associated with Talmy Givon, Paul Hopper and Sandra Thompson, though it has well-established historical antecedents (Croft, 1990:2).

The traditional perception of word order typology is based on the description of syntax as sentence grammar that is as arrangement of words in a sentence. Word order typology has played a major role in the recent development of language typology. Although we retain the term word order typology, which has become established for referring to this area of typology, we are concerned not so much with the order of words as with the order of constituents, i.e. it would be more correct to speak of constituent order typology (of Greenberg's term 'the order of meaningful elements').

In saying a given language has subject-verb-object basic word order, it is irrelevant whether the constituents referred to consist of one or more words, so that this characterization applies equally to *John hit Mary* and to *The rogue elephant with the missing tusk attacked the hunter who had just noticed that his rifle was unloaded*. Secondly, in addition to being concerned

with the order of constituents that contain one or more words, in the order of morphemes less than a word, for instance in the relative order of affixes and stems.

1. Word order parameters

The constituent order of a clause, namely the relative order of subject, object, and verb, the order of modifiers (adjectives, numerals, demonstratives, possessives, and adjuncts) in a noun phrase and the order of adverbials are the primary word orders of focus. Word order parameters have been implemented in the typological study on the constituent order of a clause, namely the relative order of subject, object, and verb, on the order of modifiers (adjectives, numerals, demonstratives, possessives, and adjuncts) in a noun phrase and on the order of adverbials. The order of constituents of the clause is one of the most important word order typological parameters. In its original form, these parameters characterizes the relative order of subject, verb, and object, giving rise to six logically possible types, namely SOV, VSO, VOS, OVS, OSV, SVO (Comrie, 1981:80).

SOV is the order used by the largest number of distinct languages; languages using it include Korean, Mongolian, Turkish, the Indo-Aryan languages and the Dravidian languages. Some, like Persian, Latin and Quechua, have SOV normal word order but conform less to the general tendencies of other such languages. A sentence glossing as "She bread ate" would be grammatically correct in these languages. SVO languages include English, the Romance languages, Bulgarian, Macedonian, Serbo-Croatian, Chinese and Swahili, among others. "She ate bread" is the correct one in these languages. VSO languages include Classical Arabic, the Insular Celtic languages, and Hawaiian. "Ate she bread" is grammatically correct in these languages. VOS languages include Fijian and Malagasy. "Ate bread she" is grammatically correct in these languages. OVS languages include Hixkaryana. "Bread ate she" is grammatically correct in these languages. OSV languages include Xavante and Warao. "Bread she ate" is grammatically correct in these languages. Sometimes the patterns are more complex: German, Dutch, Afrikaans and Frisian have SOV in subordinates, but V2 word order in main clauses, SVO word order being the most common. Using the guidelines above, the unmarked word order is then SVO. French uses SVO by default, but in the common case where the object is a clitic pronoun, the order is SOV

instead. (Wikipedia). The example given below exemplifies the difference between English and Tamil in terms of word order.

1. a. The farmer killed the duckling. (English: SVO)
   b. andta vivacaayi vaattaik konRaan (Tamil: SOV)
      that farmer duckling-acc killed

There are many languages where the criteria of identifying subjects seem to split across two noun phrases, thus making it difficult or impossible to specify the linear order of subject with respect to other constituents. Secondly, the parameter is only applicable to languages in which there is a basic word order determined, at least by the grammatical relations relative to the verb, and there are some languages where this seems not to be the case. When we classify English as being basically SVO, we keep away from the fact that in special questions the word order of wh-element is determined not by its grammatical relation, but rather by a general rule that places such elements sentence initially, thus giving rise to such OSV orders as *Who(m) did John see*? Even in many languages that are often described as having free word order, there is some good indication that one of the orders is more basic than the others.

A further problem in assigning basic word order is where the language has split i.e. different basic word orders in different constructions. In some instances, this does not lead to undue difficulty in assigning basic word order, where one of the word orders is clearly much more restricted than the other. Thus, the presence of special questions in English where the object precedes the subject does not seriously jeopardize the claim that English is a SVO language, and one can establish a general principle that word order of statements is more basic than that of questions.

In the case of word order within the noun phrases, relative order of adjective (A) and noun (N) is crucial. Here, as with most of the following parameters, there are only two possibilities, for basic order (if there is a basic order), namely AN and NA. AN order is illustrated, for instance, by English: *the green table*. NA order is illustrated by Tamil; e.g., *periya viiTu* 'big house'. It seems to be generally true that languages with the basic word order NA are more tolerant of exceptions of this kind than are languages with the basic word order AN (Greenberg's universal number 19). English examples like *court martial*, *envoy plenipotentiary* are marginal and often not felt synchronically to be sequences of noun and adjective.

Related to adjective-noun order, at least conceptually, is the order of head noun (N) and relative clause (Rel) in the relative clause construction. Again, there are two possible orders: either the head precedes the relative clause as in English or the relative clause precedes the head as in Tamil.

3.a. the apple which that man gave to that woman (English)

b. *andta manitan andta peNN-iRkuk koTu-tt-a aappiL* (Tamil)

that man that woman_DAT give_PAS_RPM apple

Although adjectives and relative clauses are similar conceptually, and indeed hard to separate from one another in some languages, in many languages they differ in word order; English is AN but N Rel, for instance. In English, moreover, many heavy adjectival phases have the same order as relative clauses, as in *people fluent in three languages*. This suggests that in characterizing languages as AN or NA, preference should be given to the order of simple adjectives rather than to that of more complex adjectival phrases.

Completing our list of constituents of the noun phrase is the relative order of possessive (genitive) (G) and head noun (N), again gives two possible orders: GN and NG. Although we have not always illustrated problems caused by conflicting word orders within the noun phrase, we may do so here in discussing the characterization of English, which has two possessive constructions:

(i) the prenominal Saxon genitive

4. the man's hat

(ii) the postnominal Norman genitive

5. the roof of the house.

Although the Norman genitive is, textually, the more frequent of the two, and has become more frequent over the historical development of English, it is far from clear, for the modern language, whether one can specify that one of these two constructions is the basic order of head noun and possessive in English.

The last among the major word order parameters to be examined here is whether a language has prepositions (Pr), such as English *in the house*. The terminology of traditional

grammar, though providing the two terms preposition and postposition, does not provide a single term to cover both of these, irrespective of order and recent typological work has filled this gap by coining the term 'adposition'. Most languages clearly have either prepositions or postpositions, though there may be occasional exceptions; however, there are also languages which are more mixed. Most Australian languages have neither prepositions nor postpositions.

Other parameters discussed by Greenberg are the following (Comrie, 1981:85)

- First, whether auxiliary verbs typically precede the main verb (as in English *will go*).
- Secondly, whether in comparative constructions, the standard of comparison precedes the comparative or follows it.
- Finally, we may distinguish between languages which are overwhelmingly suffixing as opposed to those which are overwhelmingly prefixing; while there are few good examples of the latter type, and few where a large number of prefixes can be added to a given stem, there are some languages with long sequences of suffixes but virtually no prefixes.

2. Correlations among word order parameters

Most of the parameters are logically independent of another. For instance, there is no a priori expectation that the presence of SOV basic word order in a language should correlate more or less well with the presence of AN rather than NA word order. Even in those instances where one might expect, a priori, there to be some correlations, as between AN order and Rel N order (these are different kinds of attributive constructions), there are sufficient languages that do not have this correlation – such as English, with AN but N Rel – to demonstrate that the correlation is far from necessary. Despite this, it turns out to be the case that there are many statistically significant correlations that can be drawn among these various parameters, and it is one of Greenberg's more specific merits, in addition to initiating general interest in this approach to language typology to have established so many of these correlations (Comrie, 1981: 86).

2.1 Greenberg's Correlations

The universals listed by Greenberg contain both absolute universals and tendencies, both non-implicational and implicational universals (1981:86). Throughout, Greenberg's statements are very careful and cautious, based meticulously on his sample of languages and other

languages from which he had relevant data. For instance, in the first universal, 'in declarative sentences with nominal subject and object, the dominant order is almost always one in which the subject precedes the object,' the statement is as a (strong) tendency, rather than as an absolute.

Another instance of Greenberg's care, especially in contrast to much later work, can be seen in the fact that he consistently avoids generalizing unilateral implications to bilateral implications, where the material does not justify doing so. Thus, despite universal 27 'If a language is exclusively suffixing, it is postpositional: if it is exclusively prefixing, it is prepositional,' there is no corresponding universal that would say 'if a language is postpositional, then it is suffixing; if a language is prepositional, it is prefixing.

Thirdly, Greenberg does not take any one single parameter as being the basic determiner of word order typology, and again this caution is amply justified by the nature of the data. Thus, word order in the clause is a good predictor of adposition order, at least for VSO languages and for SOV languages. However, it turns out that it is the order of adposition and noun that provides the best predictor for that of genitives, as per universal 2. 'In languages with prepositions, the genitive almost always follows the governing noun, while in languages with postpositions it almost always precedes'.

Fourthly, many of the correlations are stated, where required by the data, not as holistic correlations across all parameters or as simple correlations involving only two of the parameters, but as complex correlations involving conditions among several parameters, as in universal 5, which correlates certain instances of clause order, genitive order, and adjective order, 'If a language has dominant SOV order and the genitive follows the governing noun, then the adjective likewise follows the noun'. Perhaps the most extreme example of such a complex condition is universal 24: "If the relative expression precedes the noun either as the only construction or as an alternative construction, either the language is postpositional, or the adjective precedes the noun or both." (Comrie, 1981:87)

2.2. Generalizations of Greenberg's Results

Greenberg lists 24 logically possible types of language, based on the combinations of the four parameters (Comrie, 1981:89).

VSO/SVO/SOV,Pr/Po, NG/GN, NA/AN;

Of these 24, 15 are actually attested in his sample or in other languages used by him in this piece of work. However, it is noticeable that the distribution of languages among those fifteen attested types is far from even. In fact, four types each contain far more languages than does any of the other eleven, as follows (Comrie, 1981:89).

(a) VSO / pr / NG / NA (Comrie, 1981:89)

(b) SVO / pr/NG/ NA

(c) SOV / po / GN / AN

(d) SOV / po / GN / NA

(12)

On the basis of this observation, one might think that in order to establish universal tendencies, rather than absolute universals, of word order typology, it would be possible to work with just these types, neglecting the relatively few languages that fall into the other eleven attested types. If one makes this assumption, then a number of other generalizations seem to emerge from the four types listed above (Comrie, 1981:89).

- First, except for the position of the subject in clause order, types (a) and (b) are identical. If one were to omit the subject from consideration, then types (a). and (b) could be combined into a single VO type; types (c) and (d) would then both characterized as OV.
- Secondly, on most parameters, types (a) and (b) are precisely the inverse of types (c) and (d); the former are VO, Pr, NG, and NA; the latter are OV, Po, GN and either AN or NA, the only embarrassment to this generalization being the widespread occurrence of NA basic order in OV languages. However, since we are working with tendencies, we might be prepared to overlook this complication, and work with only two major types in terms of word order, (e) and (f):

  (e) VO, Pr, NG, NA
  (f) OV, Po, GN, AN

The kinds of generalization of Greenberg's results are associated tend to correlate with this distinction into two types: type (f) tends also to have prenominal relative clauses, a strong tendency towards suffixing, auxiliary verbs after the main verb, and the standard of comparison before the comparative; while type (e) tends to have postnominal relative clauses, a some tendency towards prefixing, auxiliary verbs before the main verb, and the standard of comparison after the Comparative. The kinds of generalization of Greenberg's results are associated with two linguists in particular, Lehmann and Vennemann. Lehmann argues, first, that the order of subject is irrelevant from a general typological viewpoint, so that we may indeed work with two major types of language, OV and VO.

In Particular, while the existence of verb-initial word order or of SOV word order seems to correlate highly with various other typological parameters of word order, the existence of SVO word order does not seem to correlate particularly well with any other parameter; knowing that a language is SOV, we can with considerable reliability predict its other word order parameter values; knowing that a language is SVO, we can predict virtually nothing else.

Lehmann (1978) also proposes a formal explanation or rather generalization, of the observed correlations. He argues that V and O are primary concomitants of each other, and that modifiers are placed on the opposite side of a constituent from its primary concomitant. Thus in a VO Language, the primary concomitant of V is the 'Post verbal O, so modifiers of V (in particular auxiliary verbs) go to the left of V (AUX V); likewise, V is the primary concomitant of O, so modifiers of O. (in particular, adjectives, relative clauses and possessives) go to the opposite side from V, namely to the right. Conversely, in an OV language: the primary concomitant of V is the O to the right. Conversely, in an OV language; the primary concomitant of V is the O to the left, so other modifiers follow the V (e.g. V Aux); the primary concomitant of O is V, to the right, so other modifiers of O go to the left i.e. adjectives, relative clauses and possessors precede the object noun.

Apart from problems stemming from generalizing Greenberg's universals, there are two other specific problems in this explanation. First, the explanation for order within the noun phrase applies strictly only to object noun phrases and does not generalize directly to subjects or noun phrases in adverbials. One could presumably argue that the order is generalized from objects to other noun phrases. But if this were so one might expect to find languages where the

order of constituents within the noun phrase was different for objects and other noun phrases and such instances are either non-existent or rare.

Secondly, the explanation, as is clear from Lehman's exemplification, makes no distinction between modifiers which are expressed as separate words and those which are expressed as affixes; with regard to modifiers of verbal, this creates few problems, as there is a high correlation between having the auxiliary after the verb and having suffixes and between having the auxiliary before the verb and having prefixes.

Vennemann argues that in each of the construction types under consideration. I.e. the relation between verb and object, between noun and adjective, etc., one of the constituents is an operator and the other the operand (Corresponding to the traditional term, the structuralist's term is adjunct or modifier of head), the assignment being as in the following table (Comrie 1981: 91).

OPERATOR	**OPERAND**
Object	Verb
Adjective	Noun
Genitive	Noun
Relative Clause	Noun
Noun Phrase	Adposition

Standard of Comparison in Comparative Adjective

The assignment of operator (adjunct) and operand (head) status is in most instances uncontroversial, though some linguists have been less comfortable with declaring the head of an adpositional phrase to be the adposition, rather than the noun (phrase). However, this assignment can be 'justified, for many languages, by the usual structuralism syntactic test of substitution: In English for instance, the prepositional phrase of *John is in the house* can be substituted by *in* but not *by* the house, *cf. John is in* but not, as a similar construction. *John is the house* and the traditional term prepositional phrase attests to the view that the preposition is the head (just as the noun is head of a nun phrase, the verb of a verb phrase). For present purposes, at any rate, we may assume this assignment of operator and operand to individual constructions, bearing in mind

that these assignments have been made by other linguistics working independently of the particular correlations that Vennemann wishes to establish.

We can now profitably contrast this position or more specifically Vennemann's with Greenberg's work. Vennemann (1972, 1974) presents us with a schema that is conceptually very simple and very elegant however, in order to establish this schema; certain liberties have to be taken with the data. Greenberg's approach, on the other hand, is truer to the data, but ends up rather with a series of specific universals that do not fit together as a coherent conceptual whole.

3. The Value of Word Order Typology

One of the main roles of word order typology in the recent study of language universals and typology has been methodological – historical: the work originated by Greenberg demonstrated that it is possible to come up with significant cross-linguistic generalizations by looking at a wide range of languages and without necessarily carrying out abstract analyses of these languages; in addition, there were a number of more specific methodological lessons, such as improvements in techniques for language sampling.

However, the question does arise as to just how far- reaching word order typology is in terms of the over-all typology of a language. In Greenberg's original work, relatively few correlations between word order and other parameters were drawn. In Vennemann's work, essentially no further correlations are drawn and as we have seen even the elegance of Vennemann's account of over-all word order typology is in certain respects questionable.

Hawkins's work (1979, 1980) demonstrates that if word order typology is to be rigorous, then it must forsake the extreme elegance of Lehmann's or Vennemann's schemata. At present, the main proponent of word order typology as the basis of a holistic typology is Lehmann, but it has to be acknowledged that, in addition to qualms about the degree of generalization made in his account of word order itself, most of the detailed correlations between word order and other phenomena, including even phonology, remain in need of establishment on the basis of data from a wide range of languages.

4. Deeper explanations for word order universals

Implicational universals first reached a wide linguistic audience in Joseph Greenberg's influential paper, "some universals of grammar with particular reference to the order meaningful elements" (Greenberg 1966a), first presented in 1961. Greenberg enumerated forty-five universals based on a thirty-language sample and on informal observations of a much larger number of languages. Only the first twenty-eight universals dealt with word order; the remaining seventeen dealt with inflectional categories. Greenberg's word order universals were incorporated in much linguistic work and considerable effort has been expended to try to explain the universals. If one examines all of Greenberg's universals that refer to adjective noun order, a striking pattern emerges (Croft, 1990:54):

(SOV & GN) > NA Universal 5

VSO ⊃ NA Universal 17

N Dem ⊃NA

N Num = NA (both derivable from universal 18)

In all of the implicational universals involving adjective-noun order, one finds the order noun adjective in the implicatum of the universal. If the contrapositive of these universals were taken, they would all have the order adjective-noun in the implicants; (1990:54).

AN ⊃ (SVO & GN)

AN ⊃ VSO

AN ⊃ Dem N

AN ⊃ Num N.

The generalization that covers these universals is "All implicational universals whose implicatum involves the order of noun and adjective will have the order NA as the implicatum". (with a complementary statement for the contrapositives following logically).

Greenberg called this as pattern dominance: the dominant order was the one that always occurred in the implicatum. To say some word order P is dominant is to say that implicational universals involving P will be of the form X ⊃ P (or the contra positive P ⊃ X) and never of the form X ⊃ P (or P ⊃ X). Intuitively, the dominant order can be thought of as the preferred order of elements, other things being equal.

Dominance can be read directly from a tetrachoric table. Consider the table for A N ⊃ Dem N (Croft, 1990:54)

	Dem N	N Dem
NA	X	`X
AN	X	--

The dominant order is the order that occurs with either possible order of the cross-cutting parameter. Thus, NA is dominant because it occurs with either DemN or N Dem, whereas AN can occur with Dem N only. Likewise, Dem N is dominant. The orders that are not dominant, AN and N Dem, are called recessive by Greenberg.

The other pattern that Greenberg discovered in his universals is harmony; this pattern is also derivable directly from the tetrachoric table, though it is less obviously manifested in the implicational universal. A word order on one parameter is harmonic with an order on the cross-cutting parameter if it occurs only with that other order. In the preceding example, AN is harmonic with Dem N and N Dem is harmonic with NA. Harmony defined in this way; is not reversible: Dem N is not harmonic with AN because it also occurs with NA and NA is not harmonic with N Dem because it also occurs with Dem N. Harmony is always defined with respect to the recessive orders: The recessive order is harmonic with the order that occurs with it, and not the other way around.

Harmony is only reversible in a tetrachoric table with two gaps, expressible by a logical equivalence, such as is the case with genitive-noun order and adposition-noun order (croft, 1990:55).

	NG	GN
Prep	X	--
Post p	--	X

In this example of a logical equivalence, Prep is harmonic with NG and vice versa, and Postp is harmonic with GN and vice versa. Also, in a logical equivalence there is no dominant order, since each word order type occurs with only one word order type on the other parameter.

From the implicational universals discovered by Greenberg and later researchers, dominant orders and two major harmony patterns have been found. The first column lists the

dominant pattern for each word order. The second and third columns list word orders that are harmonic with each other. The first harmonic pattern is often called the *OV pattern,* based on the order of nominal object and verb, and the second is often called the *VO pattern.*

Greenberg's analysis illustrates the next step in a typological analysis; whereas an implicational universal describes a relationship between just two parameters, concepts like dominance and harmony describe a relationship between large numbers of parameters in a single stroke. The concept of dominance, for example defines a relationship between a particular word order type and any other parameter that is involved with it. Many of these deeper and deeper and broader typological concepts can be recast in terms of a generalization over implicational universals. In some cases, however, they cannot be described in terms of implicational universals very easily. However, they can of course be directly read off tetrachoric tables or other descriptive representations of the distribution of attested language types. As more of these broader concepts have been discovered and employed, they have replaced the implicational universals as typological generalizations.

Greenberg considers both dominance and harmony to operate in explaining word order patterns. He proposes the following generalizations: "A dominant order may always occur, but its opposite, the recessive, occurs only when a harmonic construction is likewise present". (Greenberg 1966a: 97).

The concluding section of Greenberg's original word order paper is devoted in large part using the interaction of dominance and harmony to explain some subtle and apparently inconsistent word order patterns. For example, the logical equivalences preposition = NG and postposition = GN have some exceptions: there exist languages with prepositions and genitive-noun order and languages with postpositions with noun-genitive order. However, in almost all of the languages in which the genitive-noun order is disharmonic with the adposition order, the genitive-noun order is harmonic with the adjective noun order, which suggests that the genitive-noun order is influenced by the adjective noun order.

Greenberg's analysis is one of the earliest examples of an important type of explanation of cross-linguistic variation, the concept of competing motivations. Competing-motivations models describe the interaction of universal typological principals in order to account for the

existence of variation in language types. In a competing motivations model, no one language type is optimal because the different principles governing the existence of language type are in conflict. In Greenberg's word order analysis, dominance favours some word orders, such as NA absolutely while harmony will favour an alignment of adjective with other modifiers. Since for some modifier-noun order is dominant, and for others, noun-modifier order is dominant, a language cannot be harmonic without having some recessive orders. However, an order cannot be both recessive and disharmonic at the same time. This is the interaction between dominance and harmony that Greenberg described with his principle and which accounts in a single stroke for the unattested types in the tetrachoric tables for word order types. The general principle behind competing-motivation analysis is attested types must be motivated by at least one general principle: the more motivated a language type is, the more frequently it will occur; and unmotivated language types should be unattested or at most extremely rare and unstable. The value in competing-motivation models for typology is that they can account for both variation in language types and also frequently of language types across the world.

Word order topologists immediately after Greenberg focused almost exclusively on harmony. The two harmonic types were named "OV" and "VO" after the declarative clause order type. Harmonic patterns were treated as reversible: AN, Dem N and Num N were harmonic with each other regardless of whether the order was recessive. The major drawback of this approach is that it is empirically less adequate than Greenberg's original formulation. Although many languages fit one or the other of the two harmonic types, many other languages do not, having instead one or more, dominant word order that is disharmonic with the overall pattern of the language. Harmony is only one half of the picture.

The most important word order work since Greenberg is that of John Hawkins (Hawkins 1980, 1983). Hawkins used a sample of over 300 languages and thus brought in a much greater range of data, especially data for the various noun modifiers (demonstrative, numeral, adjective, genitive and relative clause). Hawkins introduces two competing motivations for noun-modifier order, similar to Greenberg's concept of dominance. The first concept is heaviness (Hawkins 1983:90). Certain types of modifiers tend to be larger grammatical units, in terms of number of syllables, number of words and syntactic constituency (relative clauses vs genitive phrases vs

single- word demonstratives and numerals), and could be ranked in order of heaviness as follows:

Rel $\subset$ Gen $\subset$ Adj $\subset$ (Dem, Num)

Hawkins (1980, 1983) interprets this as a preference for heavier modifiers to follow the head noun and lighter modifiers to proceed. This concept resembles Greenberg's concept of dominance in its effect of complementing harmony: heavier modifiers follow the noun even if the harmonic order is modifier-noun and lighter modifiers precede the noun even if the harmonic order is noun-modifier. Since demonstrative and numeral are lighter and adjective and relative clauses are heavier, they correspond roughly to Greenberg's dominant order Dem N, Num N, NA and N Rel.

Hawkins also introduces the concept of mobility to account for a number of exceptions in which neither harmony nor heaviness could be the operating factors (Hawkins 1983:92-4). The notion of mobility is that certain modifiers are more variable in their word order within single language, and so are more likely to switch from a harmonic order to a disharmonic one. Specifically, Dem Num and Adj are more mobile than Gen and Rel.

Hawkins uses this principle to explain why some "lighter" modifiers such as Dem, Num, and Adj are found to follow the head noun while "heavier" modifiers such as Rel precede. The assumption here is that the original harmonic order was modifier head, including Rel N and Adj N, but historically the adjective shifted to NA order while the relative clauses did not. Thus, the mobility principle unlike the heaviness principle has an essentially diachronic dimension to it, as Hawkins note, "we are in effect claiming that constraints on diachronic are an important part of the explanation for synchronic universals. We will encounter mobility again in the guise of stability" (Hawkins 1983:108).

Hawkins heaviness principle, if it is indeed equivalent to Greenberg's dominance, can be thought of as an explanation of dominance. The dominant order is that which places the lighter element before the heavier element. This explanation actually represents a putative relationship between one grammatical parameter word order, taken in general and another, independent grammatical parameter—the length (in phonological and syntactic terms) of the grammatical

element. This relationship has a plausible and well supported functional explanation: order of constraints reflects ranking in size for processing seasons.

Hawkins proposed his heaviness principle only for noun modifiers whereas Greenberg's concept of dominance applied to word order in general (and possibly to implicational universals in general). It is worth examining the dominant orders other than those for noun modifiers to see if the heaviness explanation is at least a plausible one. There is some limited evidence (universal 24) that prepositions are dominant over postpositions. This is quite reasonable from the heaviness principle as adpositions are generally smaller constituents than the noun phrases they govern. In the case of object verb- order, it seems likely that objects are heavier than verbs when they are full noun phrases, but not when they are pronouns. Greenberg has a universal, 25, which states that if the nominal object precedes the verb, then the pronominal objects is before the verb, but the dominant order for nominal objects is to follow. This suggests that heaviness is a major factor in determining object position typologically, since pronouns are also smaller than full noun phrases.

The dominant subject-verb order may also be accounted for by heaviness. Recent text studies have demonstrated that across languages subjects, especially transitive subjects, tend to be pronominal and nominal subjects when they occur tend to follow the verb cross—linguistically (Dubois 1985, 1987, Lambrecht 1987). Thus, with subjects as well heaviness may be contributing factor to the dominant word order, though Dubois and Lambrecht emphasize iconic principles of information flow. Iconic principles may also be involved in the unequivocal dominance of subject-object order and antecedent-consequent order in conditionals

Hypotheses have been proposed to account for harmony. Greenberg suggests that harmony represented an analogical relationship between the harmonic orders, placing all of the modifiers on one side of the head. This account held for nominal modifiers, but it remains to include the ad position and declarative clause patterns. Greenberg suggests an analogy between genitive constructions and ad positional constructions, for example between *"the inside of the house*" (NG) and *"inside the house*" (prep). Greenberg also proposes an analogy between the ordinary genitive and the subjective objective genitives, that is, the genitive of subjects and objects nominalized verbs, so that the following analogy holds: genitive is to noun ("*John's house*") as subject and object (genitive) is to (nominalized) verb ("Germany's conquest of

Europe", Greenberg 1966 a: 99). These analogies account for the harmony of SV/ OV/ Post P/ GN and VS/ VO/ Prep/ NG, which otherwise appear to be a rather mixed of word orders. (Croft 1990:590).

Greenberg's hypotheses also have diachronic importance, since adpositions frequently evolve from genitive constructions and finite declarative clause constructions also commonly evolve from nominalizations with genitive arguments. This can be observed directly in many languages, in which the genitive and adpositional constructions and/ or the genitive and declarative constructions are similar and identical. Greenberg cites Berber as a language in which the genitive form of the noun is same as the subject form (provided the subject immediately follows); thus the VS construction is very close to the NG construction (Greenberg 1966 a: 99). In many languages, the genitive form of the noun is identical with the subject form (especially transitive: Allen 1964) and \ or the object form. In many more languages, the adposition construction is transparently a genitive construction, with the adposition the head.

The explanations for harmony based on analogical head-modifier relations are more successful than the various attempts to account for the harmonic patterns in semantic terms, since the variety of semantic relations that hold between harmonic types is too great to subsume under a single semantic generalization. (E.g. verb and object, adposition and noun, adjective and noun, adverb and adjective). Moreover, evidence that the same construction is used for the more diverse word order types or the historical source for those word order types, strongly suggests that the head-modifier analysis is essentially correct at same level of explanation (Hawkins 1983: 93-8).

The examination of morphosyntactic constructions and word order can also account for anomalous word order patterns. Word order is particularly variable at the clause level and somewhat less so at the phrase level (in fact, one could propose the generalization that the lower the morphosyntactic level, the more rigid the word order).

Of course, word order is never entirely free, and constraints on the variation can be found. Several of Greenberg's original word order universals refer to flexibility (or inflexibility) of word order. Universal 6 states that all VSO languages have at least SVO as an alternative order, while universals 7, 13 and 15 state that in SOV languages with at most OSV as an

alternative order (the rigid SOV type) then neither adverbial modifiers of the verb nor subordinate verbal forms can follow the main verb. The most thorough study of word order variation in the declarative clause is Steele 1978. Steele discovered that certain alternative word orders were more likely to be found than others. In particular, VSO and SOV are most likely to have VOS and OSV respectively as alternative word orders. In other words, the most likely alternative orders kept the verb in the same position and reversed the position of subject and object SVO was also a very common alternative order to both VSO (universal 6) and SOV (this is the non-rigid SOV type). The phenomenon can be accounted for by the dominance of SV and VO orders. Non rigid VSO languages allow subjects to shift to their dominant position. Languages with basic SVO order are the least likely to have alternative word order: i.e. they are the Languages type that is most likely to have rigid declarative clause word order.

More detailed investigation of actual texts in many languages has revealed that word order is more flexible in more languages than was previously imagined. Close attention has been paid to "Free word order languages" by which is meant, "purely discourse determined "clause constituent order and sometimes also free noun phrase constituent order. (Hale 1983; Heath 1986; Mlithun 1987; D.Payne 1987). The study of typological patterns of word order variation is a relatively new area and will turn out to increasingly important in typological word order research.

The concept of an implicational universal has had its greatest impact in the area of word order. Although broader theoretical concepts have been invoked to account for typological patterns of word order, implicational universals still remain a basic unit of typological analysis. Implicational universals of word order illustrate the basic elements of the typological method in their simplest form. The first step is the enumeration of logically possible language types by the structural parameters involved, illustrated by the tetrachoric table. The second step is the discovery of the empirical distribution of attested and unattested types, illustrated by the pattern of gaps in a tetrachoric (or larger) table. The third step is developing a generalization that (1) restricts variation in language types while excluding the unattested types and (2) reveals a relationship between otherwise logically independent grammatical parameters—in this case the implicational relationship. At this point, typologists from Greenberg onward have observed more far-reaching relationships between the word order parameters, such as harmony and dominance,

and then could be captured by simple implicational universals. The final step in the analysis is to seek a deeper (possibly external) explanation for the relationship, such as heaviness, mobility and the various proposals for explaining the existence of harmony.

5. Methodological problems

Recently it has become popular to compare the relevant case markings in terms of three entities: S1 (intransitive subject), A (transitive subject) and O (object) (Dixon, 1972). Mallison and Blake (1981) discuss this issue in details. The following observations are made by them.

5.1 Subject

The subject in European languages embraces S1 and A and is manifested by such features as case marking, agreement and word order as well as by the part it plays in some syntactic relationships. Greenberg assumes all languages have subject-predicate construction and he indicates that if formal criteria equate certain phenomena across languages, one accepts the equation only between entities that are semantically comparable. Greenberg would not accept a formally defined subject that embraced S1and A in an accusative language and S1 and O in an ergative language.

We assume he takes S1/A to be the subject since he lists Loritja as SOV. 'Loritja' is a term used by the Aranda of central Australia for the Kukatja who speaks an ergative language in which the predominant word order is agent-patient-verb. Pullum 1977 discusses word order universals in terms of S, O and for him S is S1 / A. He adopts a Relational Grammar framework in which S1/A is initial or underlying Subject in all languages.

Ultan 1978 classifies 79 languages in terms of the order of S, O and V He does not discuss the criteria used to establish S but from his classification of ergative languages like Tongan and Western Desert (Australian) we can see that S is equated with S1/A . Steele (1978; 590) classifies 63 languages in terms of SVO, SOV, etc. She states that for languages with which she was familiar, she took subject and object to 'correspond roughly to English'. With unfamiliar languages she took the decision of the linguist responsible for the description she used. She claims that Keenan's work has made clear that, although subject is used by linguists regularly, and with confidence, a precise characterization of the notion eludes us: The fact that linguists use

the term regularly and with confidence seems to us to reflect two facts. One is that S1 and A are identified exclusively in the vast majority of languages. The other is that many linguists simply base their notion of subject on translation equivalence. If they assign the notion of subject with confidence, it is often only because they have not thought of using formal criteria.

One could in theory compare word order across languages in terms of a formally defined subject. The properties that identify subjects seem to be topic based and one might see word order in terms of topic/comment. This would seem satisfactory if the formally designed subject behaved consistently i.e. always occurred first in the clause irrespective of whether subject embraced S1\A, S1\O or made no exclusive identification of any participant in a transitive clause with S1, as is the case in Philippines languages. If semantically different subjects behaved differently according to their semantic type, then one could simply treat various types of subject separately.

If one compares basic word orders in terms of a semantically determined subject (s1/A), as is usually the case, then one could justify the procedure if S1/ A behaves consistently irrespective of formal criteria. If S1\A tends to behave differently in ergative languages, from the way it does in accusative languages, then the one could treat the ergative A separately. In other words, whether one starts out with a formally defined subject or a semantically defined one will finish up with the same result providing one checks variation in the 'formal survey' against semantics and variation in the 'semantics survey' against 'formal differences'.

Ergative languages and other types in which S1d/A are not formally identified makeup only a small proportion of the world's languages, so no matter how they are treated will not affect generalization about word order to any great degree. Practically, every ergative language A precedes O.

All the surveys of word order have shown that the semantically defined subject precedes the object in almost all languages. This means that ergative languages will not disturb a sample based on a semantically determined S1/A subject and will appear to justify the use of an S1/A subject. However, it could be that the ergative languages in fact support the generalization that A precedes O, rather than supporting the notion that S regularly precedes O.

5.2. Object

Most linguists seem to assume without question that all languages have object is always semantically patient, then it should be treated as a semantic entity along with instrument, location, etc. If one defines patient very broadly as the entity affected, effected, moved, etc., it might be passable to obviate the need for object in a large number of languages.

Dik (1978; 177) raises the possibility of explaining away apparent exceptions to the generalization that S always precedes O by reinterpreting O in some languages as patient. Although we believe that all claims about the existence of grammatical relations should be re-examined to see if in fact only semantic relations are involved, we do not see that a distinction between a semantic patient and a syntactic O is patient of any importance in studies of word order.

5.3. Indirect object

English has the following two constructions to express the same prepositional content.

8. Charles gave a bottle of Benedictine to the Alderman.
9. Charles gave the Alderman a bottle of Benedictine.

If only the first construction existed, the label 'indirect object' would not be needed; *to the Alderman* is simply a prepositional phrase like any other. In the second construction, however, the phrase the Alderman exhibits two object properties but contrasts systematically with the patient *a bottle of Benedictine.*

The two properties are (a) a position following the verb without properties preceding and (b) Correspondence with the subject of a passive equivalent as in the following sentence (10).

10. The Alderman was given a bottle of Benedictine by john.

Here they do not apply the label of indirect object to the grammatical equivalence *of the Alderman*. *The Alderman* rightly deserves a special label to distinguish it from the normal type of direct object and 'indirect object' is an accepted label. However, many linguists use the term semantically and apply it to the transnational equivalents of the Alderman in the following sentence (11).

11. John gave the Alderman a bottle of Benedictine

Irrespective of whether the phrase in question is grammatically parallel to the Alderman in the above last example (9) or whether it parallel to the Alderman in the above example (8).

5.4. Variant word orders

Where there is variation in word order, we can attempt to determine whether one order is basic. English exhibits a variety of word orders, but no one doubts that SVO is the basic or unmarked one. A pattern such as the following is highly marked (Mallinson and Blake, 1981: 125).

The proposals contained in section one of the bill we support; those in sections two and three and those in the sections two and three and those in the appendix to section four we cannot support in any shape or form whatsoever.

This OSV pattern can be used to topicalize the object or to focus it.

When we use the term 'basic word order' we mean the order that obtains in stylistically-neutral, independent, indicative clauses with full noun phrase participants for S1 or for A and O. English is of course easy to be classified as SVO. However, a problem arises when the principle of arranging the words in a sentence is allowed to be more responsive to the demands of topicalization and focus than is the case in modern English. In old English, there appears to have been much more freedom in word order

Old English is a language that exhibits a good deal of freedom of word order and a tendency for AdVS patterns. The order used for a stylistically unmarked sentence such as *John saw Mary* is almost certainly SVO. We would classify old English as SVO/Free. (It means free at the referential level. It does not imply that the use of one order rather than use of one order rather than another is of no significance.) The order used for a stylistically unmarked version of *john saw Mary* in German would be SVO too, but to simply call German an SVO language would disguise the verb-second nature of its word order**.**

6. Factors Determining word order

6.1. The Basic principles

Word order can be accounted for in terms of three general principles. (Mallison and Blake 1981: 151):

a. More topical material tends to come nearer to the beginning of the clause (to the left) than non-topical material.
b. Heavy material tends to come nearer to the end of the clause (to the right) than light material.
c. Constituents tend to assume a fixed position in the clause according to their grammatical or semantic relation or category status (noun, verb, prepositional phrase, etc.)

We use topic in the sense of what is being talked about and comments in the sense of what is being said about the topic. Typically, one thinks in terms of there being only one topic, if any in a clause, but we feel that the constituents of a clause can exhibit degrees of 'topic-ness'. By heavy material we mean internally complex material. A noun phrase that consists of two co-coordinated noun phrases (*the boy and the girl*) is heavier than a simple noun phrase (*the children*). A noun phrase with the phrasal complement (the girl on the magazine cover) or a clausal complement (*the girl who was featured in the centrefold of the financial review*) is heavier than a simple noun phrase (*the girl*).

Principles (a) and (b) are not unrelated. A topic is normally given either by the preceding linguistic context or the wider context situation of situation. It is typically a pronoun or a simple noun phrase. Complements to heads of noun phrases typically occur with material that is part of the comment, part of what is being presented as new. We use the term focus for any part of an utterance that is emphasized. As with topic it seems common to think in terms of a clause having a single focus, but there can be more than one point of focus or degree of focus. A point of focus can be marked by stress and presumably this is true in any language; it can be indicated by an affix or adposition, and it can be marked by placing the focused word or phrase at the beginning of a clause. This last possibility may be universal. We do not know of a language that does not allow an item to be fronted, though the most usual function for fronting is topicalization.

The practice of putting focused material to the left might seem to run counter to the topic-to-the left principle. The focus is normally part of the comment and could be expected to come late in the clause. There is in fact some conflict here and it is the operation of these partly conflicting tendencies that lies behind a lot of the apparent freedom of free word order languages. The conflict is only partial, however, since a constituent may be both topic and a point of focus. This will be true, for instance, where two topics are contrasted as in the following exchange.

How're the kids to today?
Well, Tommy's o.k. But Susie's got the flu.

Presumably *Tommy* and *Susie* are topics since the answer to A's question is about *Tommy* and *Susie*, but *Tommy* and *Susie* are contrasted foci. The phrases *O.K* and *the flu* are also foci.

Languages differ in the extent which they use word order variation in preference to, or as well as, stress to signal focus. In English, if we answer the door and encounter an unexpected guest, *Mary* we are likely to announce her arrival to the other members of the household by saying *Mary's here*. In fact, we would retain the stress on *Mary* even if she were an expected guest provided there were no special circumstances leading to the presupposition that she was elsewhere.

The topic-to-the left principle can be used to explain, at least in a weak sense, the preponderance of SO orders in language. SO orders (VSO, SVO, SOV) account for 85% of the languages in the sample and S usually precedes O in the languages we classified under 'other'.

For the purposes of our survey, we took S to be S1/A but, since most languages have an accusative morpho-syntactic system in which A is the unmarked choice for grammatical subject with a transitive verb, our figures effectively tends to precede O. In accusative languages, subject is typically topic and indeed, the grammatical properties that link S1 and A in an accusative language seems to be topic-based. Subjects are like proposed topics in that they appear to the left and in that they do not carry any semantic marking, usually in fact appearing in the citation form Subject agreement too seems to be to topic-based.

Givon (1976:155) gives the following schematic presentation to demonstrate how subject agreement is likely to have developed diachronically from a sequence of preposed topic and presumptive pronoun.

The man, he came → The man he-came
Topic PRO SUBJECT AG

Ergative languages are interesting with regard to the topic-to-the-left principle. In an ergative language S1 and O share the same grammatical properties that unite S1 and A in an accusative language. According to the topic-to-the left principle we should expect to find the absolutive in a topic position i.e. we should expect to find VOA and OAV and OVA among ergative languages.

Some ergative languages are only superficially ergative in the sense that there is no reflection of an opposition between A and S1/0 in the syntax. One could perhaps dismiss some of these as having ergative marking only as a relic from a 'true' ergative period, or perhaps one could expect that one or two of them borrowed their ergative marker.

The notion that S precedes O because S is normally topic is a satisfactory explanation only if we can explain independently why a topic should precede a comment. Topics do precede comments in mediums of communication other than language such as mime and dance. This is true, and it is true of at least some types of visual display.

Principle (b), the heavy-to-the right principle, can be explained in terms of the demands that art placed on our short-terms memory by its violation.

I gave the school, which said they were having difficulty finding suitable material for the fourth formers, particularly those who were slow readers, a copy of The secret life.

When the reader hears NP give NP (properly non-human) to complete construction. If, as in the above example, the first NP is overly long, the listener must retain the expectation of the patient NP while processing the elaboration of the recipient NP. This causes same strain a short-term memory and a speaker is likely to use alternative construction – NP (agent) gives NP (patient) to NP (recipient) — in order to avoid the difficulty. In general, centre embedding, i.e. any form that

involves returning to complete a construction started before the embedding, causes a strain, often a conscious strain, on the short- term memory and is avoided.

The principles of topic-to-the left and heavy-to-the right are in harmony. It is sometimes observed that pronouns often occupy different positions in the clause from noun phrases with the same grammatical or semantic function. The heavy-to-the right principle (principle (b)) is really only applicable to cases involving quite heavy constituents i.e. constituents involving chains of co-ordinate constituents, relative clauses and the like.

Principle (c) says that constituents tend to assume a fixed position according to whether they are subject, locative, dative (or whatever) or according to whether they are noun phrases, prepositional phrases etc. Strict adherence to (c) would mean strict world order and no variation according to the demands of topicalization, focusing and heaviness. If a language exhibits fixed word order, we say it follows principle (d). If languages show some kinds of variation, we say it follows (a) and /or (b).

6.2. Topicalization Hierarchies

Which constituent of a sentence is to be topic is largely determined by the context, linguistic or situational, but over and above this there is a tendency for a topic to be chosen according to a variant of the hierarchy namely 1, 2 $\supset$ 3 $\supset$ human animate $\supset$ in animate (Mallison and Blake 1981: 151). Topics also tend to be specific rather than nonspecific and definite rather than indefinite.

It is not surprising that the speaker is at the top of the topicalization hierarchy. Language use presupposes the speaker. Language use typically involves communication with a hearer. *You* are presupposed by communication, second only after *me.* The topicalization hierarchy also manifests itself in the behaviour of indirect objects. An indirect object is typically high on the hierarchy and the patient in a sentence with an indirect object is typically low, usually being inanimate in fact. It is not surprising then to find that in most languages the indirect object precedes the direct object, of course, the existence of an indirect object is hierarchically determined in the first place.

Many languages are like English in allowing human locative to be expressed as indirect objects but not non-human ones.

12. I sent my old great coat to the Salvation Army.
13. I sent the Salvation Army my old great coat.
14. I sent my old jeans to the tip
15. In sent the tip my old jeans.

It is probably true that all other things being equal a definite recipient will tend to be expressed as an indirect object especially if the patient is indefinite. It is difficult to demonstrate this since it involves finding examples with both patient and recipient on the same level of the pronoun animacy hierarchy.

16. The committee allotted the couple a baby
17. The committee allotted a baby to the couple

The sentence (16) seems more natural. The sentence (17) is natural enough if the main stress is placed on *baby*; but it suggests an add situation in which a baby is allotted as opposed to something else.

In some languages, the recipient is simply represented in the same way as any (other) phrase expressing 'to' or 'towards'. This 'marked recipient' follows the patient in some languages, occupying the same position as other local phrases. In majority of languages, the relative order of the patient and recipient is hierarchically determined, a participant higher on the animacy hierarchy appearing first and a definite participant preceding an indefinite one.

6.3. Position of clitic pronouns

Clitic pronouns typically occur affixed to the verb. In some languages, they are suffixed to the first word or first constituent of the clause and in others, they are affixed to some kind of grammatical particle. In a few languages, a pair of bound forms in a transitive clause combines to form a free form. (Mallinson and Blake, 1981: 168).

If one considers where free pronouns occur in clauses, the position of bound pronouns makes sense. In written text or the artificial examples of grammar, pronouns rather than nouns is

bound. Typical sentences of real speech consist of a verb and one or two pronouns and often not much else. Adverbial expressions are often separated from the verb and its pronouns. It is not surprising then to discover that the most common place to find bound pronouns is on the verb. One can also presume that the position of the bound pronouns reflects the earlier position of the free unstressed pronouns, though one cannot deduce the earlier position of stressed noun phrases.

Real life sentences, besides containing a verb and one or two pronouns are likely to contain a patient noun phrase, an oblique noun phrase or an adverbial. Any of these could occur at the head of the clause if they are focused, and oblique phrases or adverbials indicating the setting for the clause are particularly likely to appear at the beginning of the clause. Of course if the language is verb final these words and phrases will not normally have the verb as an opponent seeking first place in the clause.

Clitic pronouns are not the only constituents that show some affinity for the second position in the clause. Linking words naturally tend to come at or near the beginning of the clause. They tend to compete for the first position in the clause with clause with a topic or a focus, in some cases with an extra posed topic or focus. In English, the linking adverb 'however' tends to come either at the beginning of the clause often set off by an intonation break or following the first constituent, where it usually receives parenthetical intonation.

18. However, the women were not prepared for this.
19. The women, however, were not prepared for this.

Some linking words must occur at the head of the clause (and, but or in English), but others become obligatory "second position' words.

7. Summary

A brief introduction on word order is given as introduction. The word order parameters have been discussed as they are relevant in typologizing a language based on these parameters. The relative word order of subject, verb and object gives rise to six types: SOV, VSO, VOS, OSV and SVO. The correlations among word order parameters such as Greenberg's correlations have been described. Generalization of Greenberg's results also discussed. This is followed by a discussion on the value of word order typology, deeper explanations for word order universals,

and methodological problem with reference to subject, object, indirect object and variant word orders. After this a discussion on factors determining word order is given. Under this heading the basic principles, topicalization hierarchies, and position of clitic pronouns have been discussed.

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